

Claims

1.

5 A vehicle steering or guidance system,
comprising a route marker,
disposed along, or in proximity to, a prescribed route,
and responsive to interrogation by a vehicle mounted transducer,
to provide vehicle route guidance and steering direction.

2.

10 A vehicle steering system,
as claimed in Claim 1,
with a route marker configured to respond to interrogation
by, say, relay of route and/or traffic data.

3.

15 A vehicle steering system,
as claimed in either of the preceding claims,
with a route marker configured as a continuous element,
such as a cable, (flat) rail, strip, tape or band.

4.

20 A vehicle steering system,
as claimed in any of the preceding claims,
with a route marker configured as multiple discrete elements,
laid in succession and mutually juxtaposed in relation to one another,
and one or more prescribed routes.

5.

25 A vehicle steering system,
as claimed in any of the preceding claims,
with a combination of continuous and discrete route markers.

6.

30 A vehicle steering system,
as claimed in any of the preceding claims,
with one or more notional continuous route pathways,
defined by multiple discrete pathway markers or marker beacons.

7.

A vehicle steering system,
as claimed in any of the preceding claims,
wherein individual markers comprise radio frequency (RF) identification (ID) tags,
with integral flash memory chips for read/write data storage.

8.

A vehicle steering system,
as claimed in any of the preceding claims,
wherein markers supplement, or are integrated within,
otherwise conventional reflective optical markers, such as 'cats-eyes'.

9.

A vehicle steering system,
as claimed in any of the preceding claims,
with route markers configured as magnetised identification tags,
with a localised 'field of influence',
allowing coding, by say polarisation, to reflect travel direction.

10.

A vehicle steering system,
as claimed in any of the preceding claims,
with route markers disposed in a mutually staggered array,
that is with a lateral offset to straddle a notional route centre line reference.

11.

A vehicle steering system,
as claimed in any of the preceding claims,
with multiple individual route markers configured for collective response,
in groups or cells defining a common sphere of influence.

12.

A vehicle steering system,
as claimed in any of the preceding claims,
with multiple individual route marker disposition and frequency
reflecting route complexity and convolution,
with, additional markers at tight route curvature or bends.

13.

A vehicle steering system,
as claimed in any of the preceding claims,
with a default minimum, of say, 3/4 discrete route markers, in close proximity,
imposed for a collective position fix,
with an on-board vehicle arbitrator to mediate therebetween.

14.

A vehicle steering system,
as claimed in any of the preceding claims,
wherein route marker functionality includes some or all of:

- 5 • pre-program by passage of a reference vehicle over the route;
- record vehicle ID and time of passage - accessible to later traffic for collision
 avoidance and transit history;
- interrogation facility for accident investigation;
- 10 • interrogation for productivity / performance assessment and maintenance
 regime;
- service as wayside beacons with bolstered transmit radiation mode;
- selective grouping for route banding and multiple routing.

15.

- 15 A vehicle steering system,
as claimed in any of the preceding claims,
configured with backup redundancy,
through multiple independent steering systems.

16.

- 20 A vehicle steering system,
as claimed in any of the preceding claims,
with a facility for triggering emergency vehicle braking,
upon steering system failure.

17.

- 25 An automated vehicle steering system,
comprising a primary module (10),
referring to a physical reference line (30),
or multiple discrete route markers (66);
and a secondary module (20),
referring to an independent reference store (18),
30 expressed as a sequential instruction table,
configured as an emergency backup,
implemented upon failure of the primary module.

18.

A vehicle steering system,
as claimed in any of the preceding claims,
wherein a prescribed route (50) is subdivided,
into sequential segments (36),
each accorded a respective steering instruction,
in relation to a preceding segment.

19.

A vehicle steering or guidance system,
comprising
a vehicle mounted transducer,
configured to interrogate one or more route markers,
disposed along, or in proximity to, a prescribed route,
and responsive to marker reply to such interrogation,
by providing vehicle route guidance and steering direction,
to a steering actuator.

20.

A vehicle steering system,
substantially as hereinbefore described,
with reference to, and as shown in, the accompanying drawings.

21.

A vehicle incorporating a steering system,
as claimed in any of the preceding claims.

22.

An emergency combined steering and braking system, for a (road) vehicle,
using accumulated sequential pre-stored route data,
to determine current position and future steering action,
in order to follow a prescribed route,
and, in emergency circumstances, to trigger braking action,
consistent with vehicle route speed and onward route profile,
and thereby to bring the vehicle safely to a halt,
while preserving directional control,
and adherence to the prescribed route.